<u>Amendments to the Claims:</u>

      Please amend claims 1, 10, 17, 18, 19, 22, and 23, and add new claims 27-37, in accordance with the list of claims that begins on the following page, and which replaces all prior versions of claims in the application.

List of Claims:

1.   (currently amended) A signal bearing medium tangibly embodying a program of machine-readable instructions executable by a digital processing apparatus to perform operations for restoring data, the operations comprising:

  receiving a request for at least a portion of the data;

  creating a directory entry for the data in a virtual file system;

  allocating storage space for the data;

  initializing a block virtualization indicator to a value indicating that the data is not available;

  writing a subset of the data to the storage space; and

  changing the block virtualization indicator to a value indicating that the data is available for access by an application, after the subset of the data has been written to the storage space and without waiting for the entire data to be written to the storage space.

2.   (original) The signal bearing medium of claim 1, wherein the operations further comprise writing an additional subset of the data to the storage space.

3.   (original) The signal bearing medium of claim 1, wherein the operations further comprise identifying portions of the data that have not been written to the storage space.

4.   (original) The signal bearing medium of claim 1, wherein the operations further comprise:

  receiving a request for a part of the data that at least partially is not written to the storage space;

  retrieving and writing to the storage space the requested part of the data that is not written to the storage space; and

  responding to the request for the part of the data.

5.   (original) The signal bearing medium of claim 4, wherein the requested part of the data that is not written to the storage space is retrieved on a priority basis.

6.   (original) The signal bearing medium of claim 4, wherein the operations further comprise indicating a busy condition.

7.   (original) The signal bearing medium of claim 4, wherein the operations further comprise retrieving an additional subset of the data, starting at a location sequentially after the retrieved data.

8.   (original) The signal bearing medium of claim 4, wherein the operations further comprise retrieving an additional subset of the data, starting at a location wherein data is expected to be requested next.

9.   (original) The signal bearing medium of claim 4, wherein the operations further comprise retrieving an additional subset of the data, starting at a randomly selected location.

10.   (currently amended) A signal bearing medium tangibly embodying a program of machine-readable instructions executable by a digital processing apparatus to perform operations for restoring data, the operations comprising:
        receiving a request for at least a portion of the data;
        creating a directory entry for the data in a virtual file system;
        allocating storage space for the data;
        initializing a block virtualization indicator to a value indicating that the data is not available;
        writing a subset of the data to the storage space;
        changing the block virtualization indicator to a value indicating that the data is available;
        ~~The signal bearing medium of claim 1, wherein the operations further comprise:~~
        identifying if an application performs a write that does not require a read/modify/write on a block of the data that has not yet been restored; and if so,
        marking the block of the data as discarded.

11.   (original) The signal bearing medium of claim 1, wherein the operations further comprise backing up the data.

12.   (original) The signal bearing medium of claim 11, wherein the operation of backing up the data comprises storing information identifying the storage locations of each of a plurality of blocks of the data.

13.   (original) The signal bearing medium of claim 11, wherein the operation of backing up the data further comprises storing metadata including access characteristics of blocks of the data, with the data.

14.   (original) The signal bearing medium of claim 11, wherein the operations further comprise associating with the data, metadata indicating access characteristics of blocks of the data.

15.   (original) The signal bearing medium of claim 1, wherein the operation of creating a directory entry further comprises creating a pointer for the data in the virtual file system.

16.   (original) The signal bearing medium of claim 1, wherein the data is restored from tape.

17.   (currently amended) A signal bearing medium tangibly embodying a program of machine-readable instructions executable by a digital processing apparatus to perform operations for restoring data, the operations comprising:
        restoring the data into a storage virtualization engine;
        using special entries in a virtualization mapping to indicate that the data is temporarily unavailable;
        retrieving a subset of the data and writing the subset of the data to a storage space;
        releasing the data for application access after the subset of the data has been written to the storage space and without waiting for the entire data to be written to the storage space; and
        delaying completion of I/O requests for accesses to portions of the data that are identified as being unavailable in an unavailable mapping.

18.   (currently amended) A signal bearing medium tangibly embodying a program of machine-readable instructions executable by a digital processing apparatus to perform operations for restoring data, the operations comprising:

storing access metadata with the data;

creating a directory entry for the data in a virtual file system and allocating space for the data;

initializing a block virtualization to be equal to a "not present being restored" value;

begin restoring the data in blocks in an order in which references to the blocks are expected;

allowing an application to begin using the restored data, after a subset of the data has been restored using the order in which references to the blocks are expected, and without waiting for the entire data to be restored; and

delaying a read and placing a priority restore action in a restore queue, if the application attempts to read from a block of the data that has not been restored.

19.   (currently amended) A computing system, comprising:

a memory; and

a processing device coupled to the memory, wherein the processing device is programmed to perform operations for restoring data, the operations comprising:

receiving a request for at least a portion of the data;

creating a directory entry for the data in a virtual file system;

allocating storage space for the data;

initializing a block virtualization indicator to a value indicating that the data is not available;

writing a subset of the data to the storage space; and

changing the block virtualization indicator to a value indicating that the data is available for access by an application, after the subset of the data has been written to the storage space and without waiting for the entire data to be written to the storage space.

20.   (original) The computing system of claim 19, wherein the memory and the processing device are part of a host, and further comprising:

a file virtualization meta data server coupled to the host; and

a storage virtualization engine SAN volume controller coupled to the host.

21.   (original) The computing system of claim 20, further comprising a disk device and a backup device coupled to the storage virtualization engine SAN volume controller.

22.   (currently amended) A computing system, comprising:

means for receiving a request for at least a portion of data;

means for creating a directory entry for the data in a virtual file system;

means for allocating storage space for the data;

means for initializing a block virtualization indicator to a value indicating that the data is not available;

means for writing a subset of the data to the storage space; and

means for changing the block virtualization indicator to a value indicating that the data is available for access by an application, after the subset of the data has been written to the storage space and without waiting for the entire data to be written to the storage space.

23.   (currently amended) A method for restoring data, comprising the following operations:

receiving a request for at least a portion of the data;

creating a directory entry for the data in a virtual file system;

allocating storage space for the data;

initializing a block virtualization indicator to a value indicating that the data is not available;

writing a subset of the data to the storage space; and

changing the block virtualization indicator to a value indicating that the data is available for access by an application, after the subset of the data has been written to the storage space and without waiting for the entire data to be written to the storage space.

24.   (original) The method of claim 23, wherein the operations further comprise identifying portions of the data that have not been written to the storage space.

25.   (original) The method of claim 23, wherein the operations further comprise:

receiving a request for a part of the data that at least partially is not written to the storage space;

retrieving and writing to the storage space the requested part of the data that is not written to the storage space; and

responding to the request for the part of the data.

26.   (original) The method of claim 23, wherein the operations further comprise associating with the data, metadata indicating access characteristics of blocks of the data.

27.   (new) The signal bearing medium of claim 1, wherein the operations further comprise:

permitting the application to access requested blocks of the data, only if the application requests access to blocks of the data that have been written to the storage space.

28.   (new) The signal bearing medium of claim 1, wherein the operations further comprise:

indicating a busy condition, and writing blocks of the data for which access is requested, to the storage space on a priority basis, if the application requests access to blocks of the data that have not been written to the storage space.

29.   (new) The signal bearing medium of claim 28, wherein writing blocks of the data for which access is requested to the storage space on a priority basis comprises indicating a priority for the blocks of the data for which access is requested, in a queue of data items to be restored.

30.   (new) The signal bearing medium of claim 1, wherein the subset of the data is a designated quantity of blocks of the data.

31.   (new) The signal bearing medium of claim 1, wherein the subset of the data has a size that is a function of the access pattern of the data and the data type.

32.   (new) The signal bearing medium of claim 1, wherein the subset of the data is 1 block of the data.

33.   (new) The signal bearing medium of claim 1, wherein the subset of the data is 10,000 blocks of the data.

34.   (new) The signal bearing medium of claim 1, wherein the subset of the data is 10 percent of data blocks of the data.

35.   (new) The signal bearing medium of claim 1, wherein the data is a file, and wherein the portion of the data is a portion of the file.

36.   (new) The signal bearing medium of claim 1:
       wherein the data is restored from a first storage, and wherein the first storage is a sequential access storage; and
       wherein the storage space is allocated in a second storage, and wherein the second storage is a direct access storage.

37.   (new) The signal bearing medium of claim 1:
       wherein the data is restored from a first storage, and wherein the data is compressed when stored on the first storage; and
       wherein the storage space is allocated in a second storage, and wherein the data is not compressed when stored on the second storage.